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(11) EP 1 043 441 A1

(12) EUROPEAN PATENT APPLICATION

(43) Date of publication:  
11.10.2000 Bulletin 2000/41

(51) Int Cl.7: D06F 75/18

(21) Application number: 99106868.5

(22) Date of filing: 07.04.1999

(84) Designated Contracting States:  
AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU  
MC NL PT SE  
Designated Extension States:  
AL LT LV MK RO SI

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(54) Instantaneous steam iron with container and pump incorporated

(57) The invention is a steam iron with container (3) and micropump (4) incorporated. The micropump, which operates pressing a push button (6.1) on the handle (6), takes the water from the container and conveys it to the heating plate (1) in which is vaporised and then

it comes out through some holes (1.1) arranged on said plate. The steam iron is provided with a handle covered by cork (6.2) and with a spot light (8), whose beam can be oriented forward and downward, said spot light is positioned in the front part of the steam iron near the plate.

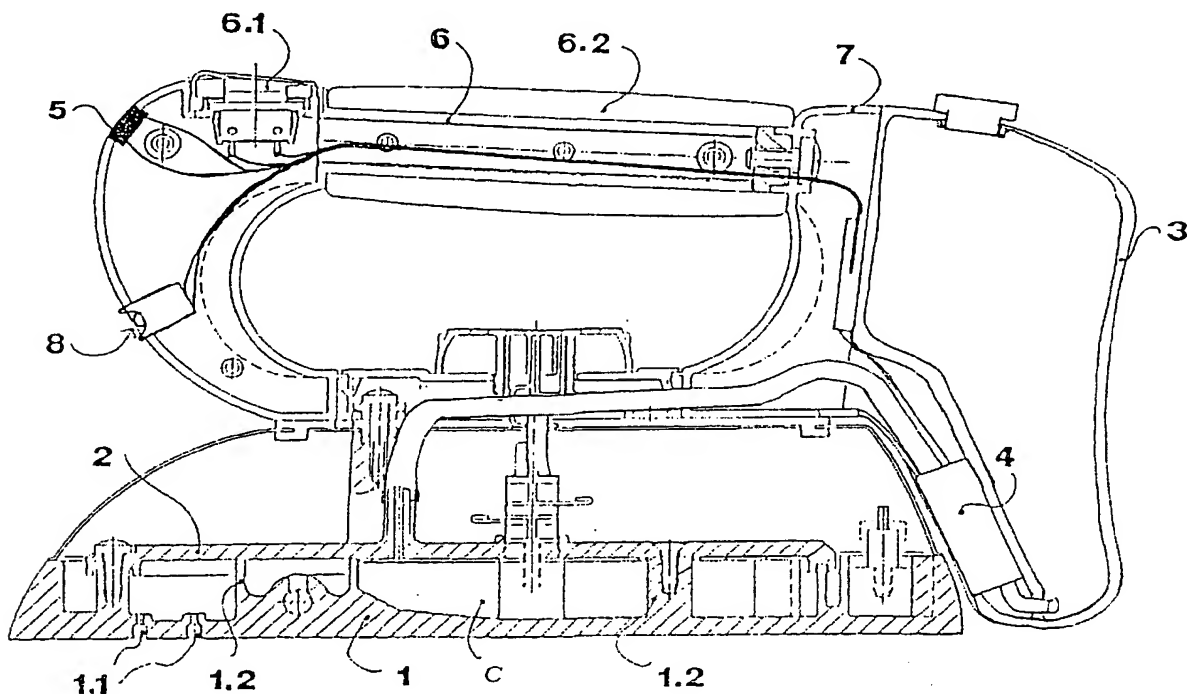


FIGURA 1

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## Description

[0001] This patent relates to the field of kitchen utensils and fittings and specifically concerns steam irons.

[0002] Irons for domestic use have a simple structure and shape sufficiently functional according to the volume and time of the ironing work to be done.

[0003] They have an inner container in which the water to be vaporized is poured.

[0004] A system of small ducts and pipes connects the water container to the heating plate so that when the iron has an horizontal position of ironing the water flows gradually and/or drop by drop on said plate and is vaporized, then by means of a second system of ducts the vapor generated is conveyed towards some holes positioned under the plate of ironing. It is possible to interrupt the vapor emission pressing a mechanic push button which closes the pipes of water downflow towards the plate.

[0005] Steam irons for domestic use are very handy since they consist of one object with moderate dimensions both when they are used during the ironing and when are stored away; their only hindrance is the cable plugged into the outlet. However, these irons have some drawbacks such as the difficulty of regulating the quantity of vapor to be shot, the scarce pressure of the vapor, the impossibility of having vapor at low and medium temperature, the emission of vapor only in horizontal position or with a low inclination, the handle made of plastic material which increases the hands' perspiration and makes the grip unstable.

[0006] Ironing machines are well known, they consist of two parts: a plate for ironing with a handle and a base comprising a container with a pump and possibly an heating element for the vaporization in addition to the normal control and safety devices. On the one hand, these ironing machines have a greater ironing autonomy, their ironing plate can be thicker, they allow to control separately the temperature of the plate and the steam jet, the vapor shot has a greater pressure, they can shoot vapor even with the plate in vertical or oblique position and are provided with an handle made of cork which allows a safe grip of the plate. On the other hand, these ironing machines cannot be laid down on the iron well set in a common ironing board, they have a double cable to be plug into the base for the electric feeding and for the vapor which can cause discomfort during the ironing, moreover it is necessary to wait some time before the container goes into pressure and shoots the vapor. There are complex cold instantaneous ironing machines composed by two distinct parts including a container and a feeding pump, which by means of ducts, carries the water to the iron. Moreover, when these ironing machines are not in operation are considerably cumbersome and heavy to move.

[0007] In order to overcome to the above mentioned drawbacks a new type of steam iron both for professional use and for domestic use has been designed and im-

plemented which puts together some positive features of the two types of ironing machines described above without having the negative aspects.

[0008] The new steam iron, whose structure and shape is similar to the one of the professional irons or to the plate of the ironing machines, is provided with a water container included or joined to the structure of the iron but the water does not flow by gravity to the plate as in the irons for domestic use.

[0009] The water is taken from the water container and conveyed to the plate by means of a micropump activated by a push button. On said plate, which is provided with some projections, a counterplate, placed on said projections so as to obtain one or more chambers communicating outside by means of holes set on the bottom of the plate, is fixed.

[0010] The micropump, which can be any micropump known as dry pump, is set in the body of the iron and/or near the water container. The push button starting the micropump is placed on the handle, in the same or different positions (central, lateral, under the handle, etc.,) provided for the plate of the ironing machines.

[0011] The micropump is electrically fed by pressing the push button, said micropump takes the water from the container, conveys it to the slots or chambers included between the lower plate, which is electrically heated, and the counter plate. Then, the water comes out as vapor through the holes. Therefore, it is possible to obtain vapor in any moment and in a short space of time from the starting of the iron (one or two minutes), simply pressing the push button.

[0012] The vapor shot by the new iron has an higher pressure than that of the domestic irons and said pressure can be compared with that of the professional ironing machines.

[0013] In order to avoid an unsafe grip of the iron, the handle is covered by a layer of cork or other similar materials as the professional irons.

[0014] The new iron as described above, is not very cumbersome, is handy during the ironing, and can be positioned in a simple way, it can shoot vapor in any time and for any lasting with high pressure and with the possibility of shooting vapor even in oblique position and at low temperature, it can be supplied with water even during the ironing without being switch off or without waiting some minutes for the heat sinking.

[0015] On the front part of the iron, near the plate, there can be a small spot light whose beam is oriented forward or downward so as to help the ironing.

[0016] The following is just an example among many of the practical applications of the invention in question, illustrated in the attached table.

[0017] Figure 1 shows a vertical section of the new iron in which is on view the aluminium ironing plate (1) with a die-cast resistance provided, in the upper side, with projections (1.2) on which an aluminium counter plate (2) is placed and fastened so as to obtain one or more chambers (C) in which the vapor is produced and

comes out through the holes (1.1). Figure 1 shows also the handle (6), the water container (3) put on the rear structure (7) of the handle (6) and the micropump.

[0018] The push button (6.1) starting the micropump (4) is placed on the handle (6), the micropump (4) allows the water, held in a container, to flow through a silicone pipe for high temperature (4.1) to the plate (1) in order to be vaporised and then it comes out, under pressure, through the holes (1.1) which are present in the plate itself.

[0019] On the front part of the iron, near the plate (1), there is a small spot light (8) whose beam is oriented forward and downward, and there is also a pilot light (5) that shows the suitable temperature of the plate (1) as well as when the iron is able to shoot vapor. The handle (6) is provided with a cork layer (6.2) which makes the grip handy even after a lengthy use as in all the professional irons.

[0020] The above are the basic outlines of the invention, on the basis of which the technician will be able to provide for implementation; therefore, any change which may be necessary upon implementation is to be regarded as completely protected by the present invention.

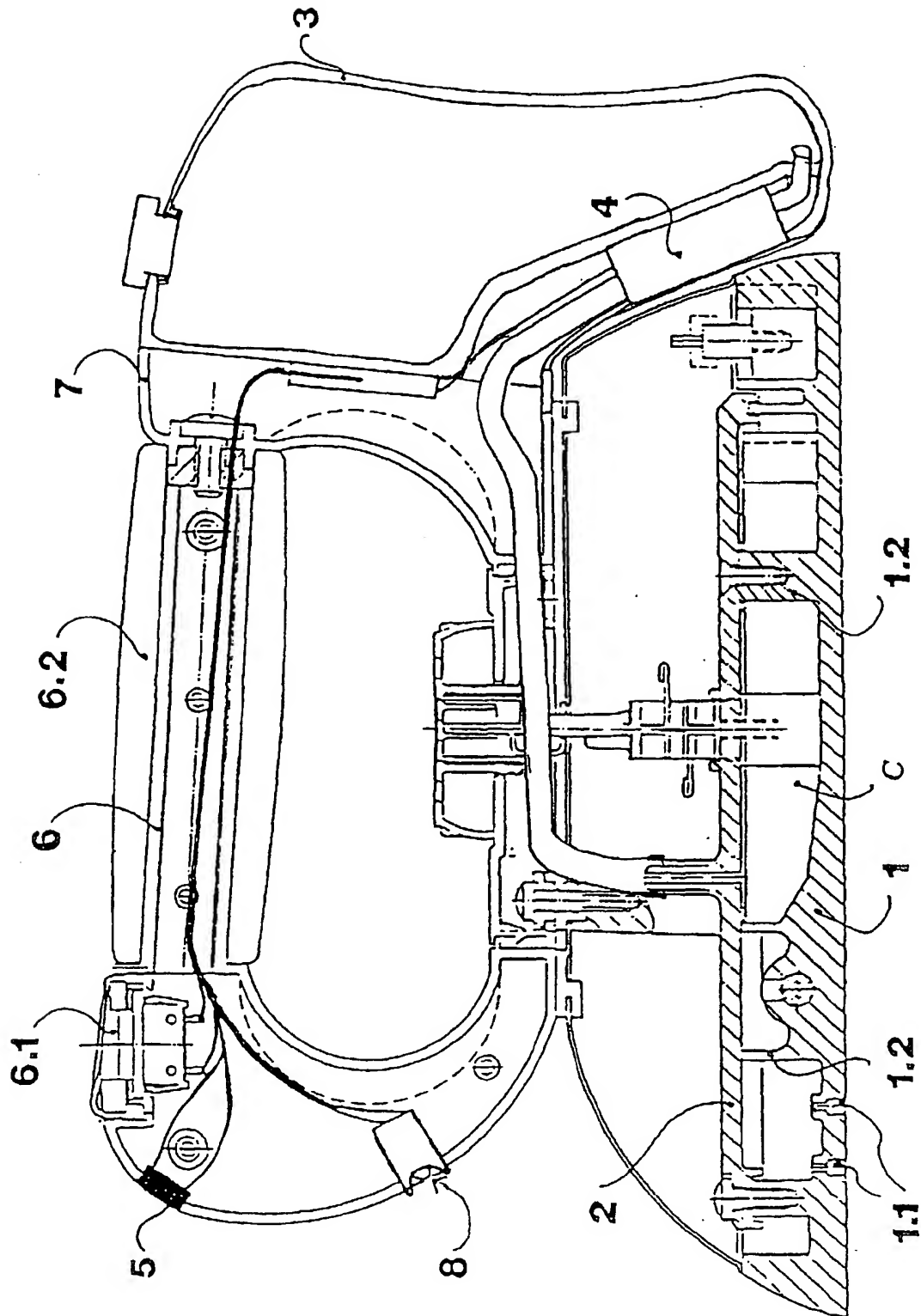
[0021] With reference to the above description and the attached drawing, the following claims are put forth.

## Claims

1. Steam iron with container characterised in that it comprises an incorporated micropump which takes the water from the container and conveys it to the heating plate, which is provided with a heating element, to be vaporised.
2. Steam iron, according to claim 1, characterised in that it is provided with a push button placed on the handle for starting the micropump; said micropump takes the water from the container and conveys it, through a silicone pipe for high temperature, on the plate in order to be vaporised, then it comes out, under pressure, through the holes arranged on said plate.
3. Steam iron, according to claims 1 or 2, characterised in that it comprises a plate, possibly with projections or notches, provided with electric element/s on which one or more counter plates with projections or notches are fastened so as to obtain one or more chambers (or labyrinths) in which the water is injected, heated and vaporised, then it comes out through the holes placed on said plate.
4. Steam iron, according to claims 1, 2, 3, characterised in that it is provided with a spot light, whose beam is oriented forward and downward, positioned in the front part of the iron.

5. Steam iron, according to claims 1, 2, 3, 4, characterised in that its handle is completely or partially covered with cork.

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## EUROPEAN SEARCH REPORT

Application Number  
EP 99 10 6868

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION
X	WO 98 42908 A (KRAINEL S.A.) 1 October 1998 (1998-10-01) * abstract; figure *	1,2	D06F75/18
X	FR 2 664 302 A (IMETEC S.P.A.) 10 January 1992 (1992-01-10) * claims; figures *	1,3	
X	US 5 341 585 A (ROWENTA-WERKE G.M.B.H. ) 30 August 1994 (1994-08-30) * abstract; figure *	1,2	
X	PATENT ABSTRACTS OF JAPAN vol. 096, no. 011, 29 November 1996 (1996-11-29) & JP 08 173700 A (TOSHIBA HOME TECHNOL CORP), 9 July 1996 (1996-07-09) * abstract *	1,2	
X	US 2 209 086 A (I. JOHNSON) 23 July 1940 (1940-07-23) * figures *	4	
X	US 3 824 719 A (AUTOMATIC STEAM PRODUCTS CORP.) 23 July 1974 (1974-07-23) * column 3, line 43 - line 47; figure 1 *	5	D06F
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 27 August 1999	Examiner Courrier, G
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	

EPO FORM 1503 03/92 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT  
ON EUROPEAN PATENT APPLICATION NO.**

EP 99 10 6868

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on  
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27-08-1999

Patent document cited in search report		Publication date	Patent family member(s)		Publication date
WO 9842908	A	01-10-1998	ES	1036793 U	01-11-1997
FR 2664302	A	10-01-1992	IT	1244228 B	08-07-1994
US 5341585	A	30-08-1994	DE	4214564 C	02-09-1993
			CH	687392 A	29-11-1996
			FR	2690932 A	12-11-1993
			GB	2266729 A, B	10-11-1993
			HK	96196 A	14-06-1996
			IT	1264372 B	23-09-1996
			JP	2032128 C	19-03-1996
			JP	6071099 A	15-03-1994
			JP	7061399 B	05-07-1995
			NL	9300781 A, B,	01-12-1993
JP 08173700	A	09-07-1996	NONE		
US 2209086	A	23-07-1940	NONE		
US 3824719	A	23-07-1974	DE	2350885 A	20-02-1975

EPO FORM P4452

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82